

Amendments to the Claims:

Claims 1, 3, 5, 7, 11, and 13 have been amended herein. Please cancel claims 2, 4, 6, 10, 12, and 14 without prejudice or disclaimer. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended) A method for post-etch cleaning of a damascene structure having a barrier layer disposed over at least a portion of an underlying copper metallization layer and a dielectric layer disposed over at least a portion of the barrier layer, comprising:

etching at least one opening through ~~the~~a dielectric layer and ~~the~~a barrier layer to expose at least a portion of ~~the~~an underlying copper metallization layer and form an etched structure; and

subjecting the etched structure to an aqueous solution in an environment wherein the etched structure is substantially shielded from ambient light, wherein the aqueous solution comprises about 7.0% by weight acetic acid, about 0.4% by weight nitric acid, and about 0.15% by weight hydrofluoric acid.

Claim 2 (Canceled)

3. (Currently amended) The method of claim ~~2~~1, wherein subjecting the etched structure to an aqueous solution ~~comprising about 7.0% by weight acetic acid, about 0.4% by weight nitric acid and about 0.15% by weight hydrofluoric acid~~ comprises subjecting the etched structure to the aqueous solution for a period of time ranging from about 30 seconds to about 2 minutes.

Claim 4 (Canceled)

5. (Currently amended) A method for forming a damascene structure having an underlying copper metallization layer, comprising:

forming a barrier layer over at least a portion of ~~the~~an underlying copper metallization layer;

forming a dielectric layer over at least a portion of the barrier layer;

etching at least one opening through the dielectric layer and the barrier layer to expose at least a portion of the underlying copper metallization layer and form an etched structure; and

subjecting the etched structure to an aqueous solution in an environment wherein the etched structure is substantially shielded from ambient light, wherein the aqueous solution comprises about 7.0% by weight acetic acid, about 0.4% by weight nitric acid, and about 0.15% by weight hydrofluoric acid.

Claim 6 (Canceled)

7. (Currently amended) The method of claim ~~6~~5, wherein subjecting the etched structure to an aqueous solution ~~comprising about 7.0% by weight acetic acid, about 0.4% by weight nitric acid and about 0.15% by weight hydrofluoric acid~~ comprises subjecting the etched structure to the aqueous solution for a period of time ranging from about 30 seconds to about 2 minutes.

8. (Original) The method of claim 5, further comprising forming a diffusion barrier over the etched structure subsequent to subjecting the etched structure to the aqueous solution while maintaining the etched structure in the environment wherein ~~it~~the etched structure is substantially shielded from ambient light.

9. (Original) The method of claim 8, further comprising:

forming a bulk copper layer over the diffusion barrier such that the at least one opening is filled therewith; and

planarizing the bulk copper layer to a surface of the dielectric layer.

Claim 10 (Canceled)

11. (Currently amended) A method for substantially preventing corrosion of copper metallization exposed through an opening etched in an overlying material layer of a damascene structure during an aqueous post-etch cleaning, comprising:

subjecting ~~the~~ a damascene structure to an aqueous solution while maintaining the damascene structure in an environment wherein ~~it~~ the damascene structure is substantially shielded from ambient light, wherein the aqueous solution comprises about 7.0% by weight acetic acid, about 0.4% by weight nitric acid, and about 0.15% by weight hydrofluoric acid; and

forming a diffusion barrier over the damascene structure and walls of the opening subsequent to subjecting ~~it~~ the damascene structure to the aqueous solution while maintaining the damascene structure in the environment wherein ~~it~~ the damascene structure is substantially shielded from ambient light.

Claim 12 (Canceled)

13. (Currently amended) The method of claim ~~12~~ 11, wherein subjecting the damascene structure to an aqueous solution ~~comprising about 7.0% by weight acetic acid, about 0.4% by weight nitric acid and about 0.15% by weight hydrofluoric acid~~ comprises subjecting the damascene structure to the aqueous solution for a period of time ranging from about 30 seconds to about 2 minutes.

Claim 14 (Canceled)